Math 5040, Assignment 4. Due Wed. Nov. 25.

Problems 1–6. From the text, Chapter 3. 1, 2, 8, 10, 11, 13.

Consider the following problem.

A small barbershop operated by a single barber, has room for at most two customers. Potential customers arrive at a Poisson rate of three per hour, and the successive service times are independent exponential random variables with mean 1/4 hour. Questions below assume equilibrium.

(a) Find the average number of customers in the shop.

(b) Find the proportion of potential customers that enter the shop.

(c) If the barber could work twice as fast, how much more business would he do?

Problem 7. Solve the problem by simulation.

Problem 8. Solve the problem by analysis.